

What is claimed is:

1. A method of isolating terpene trilactones from *Ginkgo biloba* plant material or extract comprising the steps of:  
suspending the plant material or extract in the presence of an oxidation reagent,  
extracting the terpene trilactones using an acceptable extraction agent, and  
separating the organic layer from the aqueous layer to thereby isolate the terpene trilactones in the organic layer.
2. The method of claim 1, wherein the oxidation reagent is in aqueous solution.
3. The method of claim 1, wherein the oxidation reagent is hydrogen peroxide.
4. The method of claim 2, wherein the aqueous solution contains 0.1% to 50% oxidation reagent.
5. The method of claim 2, wherein the aqueous solution further comprises an acid.
6. The method of claim 5, wherein the aqueous solution contains 0.1% to 15% acid.
7. The method of claim 5, wherein the acid is selected from the group consisting of acetic acid, hydrochloric acid, nitric acid, phosphoric acid and sulfuric acid.

8. The method of claim 1, wherein the acceptable extraction agent is selected from the group consisting of lower acetates, lower ketones, lower ether, lower alcohols and benzenes.
9. The method of claim 1, further comprising at least a first washing step to wash the organic layer with an acceptable aqueous salt or hydroxide solution.
10. The method of claim 9, wherein the acceptable aqueous solution is a solution of a salt or hydroxide selected from the group consisting of ammonium chloride, sodium carbonate, sodium bicarbonate, potassium carbonate, sodium hydroxide, potassium hydroxide, sodium thiosulfate, sodium sulfite and sodium hydrosulfide.
11. The method of claim 10, wherein the acceptable aqueous salt or hydroxide solution is a solution of a salt selected from the group consisting of sodium thiosulfate, sodium sulfite and sodium hydrosulfide.
12. The method of claim 9, wherein the acceptable aqueous salt solution is an aqueous alkali salt solution.
13. The method of claim 9, wherein the aqueous alkali salt solution has a pH of between about 7.5 and 9.5.
14. The method of claim 12, wherein the aqueous alkali solution is an aqueous alkali hydroxide solution selected from the group consisting of a sodium hydroxide solution and a potassium hydroxide solution.

15. The method of claim 9, further comprising a second washing step to wash the organic layer with an acceptable aqueous salt or hydroxide solution.
16. The method of claim 15, wherein the acceptable aqueous salt or hydroxide solutions of the second wash step is selected from the group consisting of ammonium chloride, sodium carbonate, sodium bicarbonate, potassium carbonate, sodium hydroxide, potassium hydroxide, sodium thiosulfate, sodium sulfite and sodium hydrosulfide.
17. The method of claim 15, wherein the second washing step is performed with a solution that is different from the solution used in the first washing step.
18. The method of claim 1, further comprising a step to destroy excess oxidation reagent in the organic layer by contacting the organic layer with a metal or a nonmetal catalyst.
19. The method of claim 1, further comprising a step of drying the organic layer to form an extract containing terpene trilactones.
20. The method of claim 19, wherein the extract contains more than 50% by weight terpene trilactones.
21. The method of claim 19, further comprising a step of recrystallizing the extract containing terpene trilactones to obtain terpene trilactones in higher purity.

22. A method of isolating terpene trilactones from *Ginkgo biloba* plant material or extract comprising the steps of:

suspending the plant material or extract in an aqueous solution of an oxidation reagent;

extracting the terpene trilactones using an acceptable extraction agent;

separating the organic layer from the aqueous layer;

washing the organic layer with an acceptable aqueous salt or hydroxide solution; and

drying the organic layer to form a dried extract containing terpene trilactones, thereby isolating the terpene trilactones.

23. The method of claim 22, further comprising a step of heating or boiling the suspended plant material or extract in aqueous solution for a period of time between 5 minutes and 5 hours.

24. The method of claim 22, further comprising a step of adjusting the pH of the suspended plant material or extract in aqueous solution to a range of about pH 4 and pH 6.5.

25. The method of claim 22, further comprising a step to destroy excess oxidation reagent in the organic layer by contacting the organic layer with a metal or a nonmetal catalyst.

26. The method of claim 22, wherein the oxidation reagent is hydrogen peroxide.

27. The method of claim 22, wherein the aqueous solution contains 0.1% to 30% oxidation reagent.
28. The method of claim 23, wherein the aqueous solution contains 3% to 5% oxidation reagent.
29. The method of claim 22, wherein the aqueous solution further comprises an acid.
30. The method of claim 29, wherein the aqueous solution contains 0.1% to 15% acid.
31. The method of claim 29, wherein the acid is selected from the group consisting of acetic acid, hydrochloric acid, nitric acid, phosphoric acid and sulfuric acid.
32. The method of claim 22, wherein the acceptable extraction agent is selected from the group consisting of lower acetates, lower ketones, lower ether, lower alcohols and benzenes.
33. The method of claim 22, wherein the acceptable aqueous salt or hydroxide solution is a solution of a salt or hydroxide selected from the group consisting of ammonium chloride, sodium carbonate, sodium bicarbonate, potassium carbonate, sodium hydroxide, potassium hydroxide, sodium thiosulfate, sodium sulfite and sodium hydrosulfide.
34. The method of claim 22, wherein the acceptable aqueous salt or hydroxide solution is a solution of a salt selected from the group consisting of sodium thiosulfate, sodium sulfite and sodium hydrosulfide.

35. The method of claim 22, wherein the acceptable aqueous salt solution is an aqueous alkali salt or hydroxide solution.
36. The method of claim 22, wherein the alkali aqueous salt or hydroxide solution has a pH of between about 7 and 14.
37. The method of claim 35, wherein the aqueous alkali salt or hydroxide solution is an aqueous alkali hydroxide solution selected from the group consisting of a sodium hydroxide solution and a potassium hydroxide solution.
38. The method of claim 22, further comprising a second washing step to wash the organic layer with an acceptable aqueous salt or hydroxide solution.
39. The method of claim 38, wherein the acceptable aqueous salt or hydroxide solutions in the second wash step is a solution of a salt or hydroxide selected from the group consisting of ammonium chloride, sodium carbonate, sodium bicarbonate, potassium carbonate, sodium hydroxide, potassium hydroxide, sodium thiosulfate, sodium sulfite and sodium hydrosulfide.
40. The method of claim 38, wherein the second washing step is performed with a solution that is different from the solution used in the first washing step.
41. The method of claim 22, wherein the dried extract contains more than 50% by weight terpene trilactones.

42. The method of claim 22, further comprising a step of recrystallizing the extract containing terpene trilactones to obtain terpene trilactones in higher purity.
43. A method of isolating terpene trilactones from *Ginkgo biloba* plant material or extract comprising the steps of:
- suspending the plant material or extract in an aqueous solution of hydrogen peroxide;
  - adjusting the pH of the suspended plant material or extract in aqueous solution to a pH of between 4 and 6.5;
  - extracting the terpene trilactones using an acceptable extraction agent;
  - separating the organic layer from the aqueous layer;
  - washing the organic layer with an aqueous alkaline salt or hydroxide solution;
  - drying the organic layer to form a dried extract containing terpene trilactones; and
  - recrystallizing the dried extract containing terpene trilactones to obtain terpene trilactones in higher purity.
44. The method of claim 43, further comprising a step of heating or boiling the suspended plant material or extract in aqueous solution for a period of time between 5 minutes and 5 hours.
45. The method of claim 43, further comprising a step to destroy excess oxidation reagent in the organic layer by contacting the organic layer with a metal or a nonmetal catalyst.

46. The method of claim 43, wherein the aqueous solution contains 0.1% to 30% hydrogen peroxide.
47. The method of claim 43, wherein the aqueous solution contains 0.1% to 15% acid.
48. The method of claim 47, wherein the acid is selected from the group consisting of acetic acid, hydrochloric acid, nitric acid, phosphoric acid and sulfuric acid.
49. The method of claim 43, wherein the acceptable extraction agent is selected from the group consisting of lower acetates, lower ketones, lower ether, lower alcohols and benzenes.
50. The method of claim 43, wherein the aqueous alkaline salt or hydroxide solution is a solution of a salt selected from the group consisting of sodium thiosulfate, sodium sulfite and sodium hydrosulfide.
51. The method of claim 43, wherein the aqueous alkaline salt or hydroxide solution has a pH of between about 8.3 and 9.3.
52. The method of claim 43, further comprising a second washing step to wash the organic layer with an acceptable aqueous salt or hydroxide solution.
53. The method of claim 52, wherein the acceptable aqueous salt or hydroxide solutions in the second wash step is a solution of a salt or hydroxide selected from the group consisting of ammonium chloride, sodium carbonate, sodium bicarbonate, potassium carbonate,



sodium hydroxide, potassium hydroxide, sodium thiosulfate, sodium sulfite and sodium hydrosulfide.

54. The method of claim 53, wherein the second washing step is performed with a solution that is different from the solution used in the first washing step.
55. The method of claim 43, wherein the dried extract contains more than 50% by weight terpene trilactones.
56. A method of isolating terpene trilactones from *Ginkgo biloba* plant material or extract comprising the steps of:
  - suspending the plant material or extract in water;
  - extracting the terpene trilactones using an acceptable extraction agent;
  - separating the organic layer from the aqueous layer;
  - washing the organic layer with an aqueous alkaline salt or hydroxide solution to thereby isolate the terpene trilactones in the organic layer.
57. The method of claim 56, wherein the acceptable extraction agent is selected from the group consisting of lower acetates, lower ketones, lower ether, lower alcohols and benzenes.
58. The method of claim 56, wherein the separation is performed with the addition of sodium chloride to the emulsion containing organic and aqueous layers.
59. The method of claim 56, wherein the aqueous alkaline salt or hydroxide solution in the washing step is a solution of a salt or hydroxide selected from the

group consisting of sodium thiosulfate, sodium sulfite and sodium hydrosulfide.

60. The method of claim 56, wherein the aqueous alkaline salt solution is a sodium sulfite solution.
61. The method of claim 56, wherein the aqueous alkaline salt solution in the washing step has a pH of between about 7.5 and 9.5.
62. The method of claim 56, wherein the aqueous alkali salt or hydroxide solution is an aqueous alkali hydroxide solution selected from the group consisting of a sodium hydroxide solution and a potassium hydroxide solution.
63. The method of claim 56, further comprising a second washing step to wash the organic layer with an acceptable aqueous salt or hydroxide solution.
64. The method of claim 63, wherein the acceptable aqueous salt or hydroxide solutions of the second wash step is selected from the group consisting of ammonium chloride, sodium carbonate, sodium bicarbonate, potassium carbonate, sodium hydroxide, potassium hydroxide, sodium thiosulfate, sodium sulfite and sodium hydrosulfide.
65. The method of claim 63, wherein the second washing step is performed with a solution that is different from the solution used in the first washing step.

66. The method of claim 56, further comprising the step of adjusting the pH of the suspended plant material or extract in aqueous solution to a pH of between 4 and 6.5.
67. The method of claim 66, wherein the pH is adjusted by addition of an acid selected from the group consisting of acetic acid, hydrochloric acid, nitric acid, phosphoric acid and sulfuric acid.
68. The method of claim 56, further comprising a step of drying the organic layer to form an extract containing terpene trilactones.
69. The method of claim 68, wherein the extract contains more than 50% by weight terpene trilactones.
70. The method of claim 68, further comprising a step of recrystallizing the extract containing terpene trilactones to obtain terpene trilactones in higher purity.
71. The method of claim 1, 22, 43 or 56, further comprising a step of purifying the isolated terpene trilactones by reversed phase chromatography.